NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CONSERVATION COVER

(Ac.)

CODE 327

DEFINITION

Establishing and maintaining permanent vegetative cover.

PURPOSES

This practice may be applied for one or more of the following purposes.

1. To reduce soil erosion and sedimentation;
2. To improve water quality;
3. To improve air quality;
4. To enhance wildlife habitat and pollinator habitat;
5. To improve soil quality;
6. To manage plant pests.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands needing permanent vegetative cover. This practice does not apply to:

1. Plantings intended for forage production. (Refer to the conservation practice standard Forage and Biomass Planting, Code 512.)
2. Tree and/or shrub plantings that are intended for the production of timber, other forest products, wildlife habitat, and other purposes. (Refer to the conservation practice standard for Tree/Shrub Establishment, Code 612.)
3. Plantings which will be established on critically eroding areas which usually cannot be stabilized by ordinary conservation treatment and management. (Refer to the conservation practice standard Critical Area Planting, Code 342.)
4. Plantings on field edges or in riparian buffers, for which other standards are applicable. (Refer to the conservation practice standards for Field Border, Code 386; Filter Strip, Code 393; Riparian Herbaceous Cover, Code 390, and Riparian Forest Buffer, Code 391.)

CRITERIA

General Criteria Applicable to All Purposes

Select vegetative cover to accomplish the intended purpose of the practice and the objectives of the client. Select plant types and species selected based on their compatibility in growth rates, shade tolerance, moisture requirements, and other characteristics. Plant materials shall either be native to Delaware or introduced and non-invasive (i.e., not likely to spread beyond the planted area and displace native species). When feasible, select locally native plant species and/or species that are beneficial to wildlife.

Planting rates, dates, and planting methods shall be adequate to accomplish the planned purpose. Vegetative planting material shall be from a reliable supplier. Only use certified, high quality seed and planting stock. The method of planting shall include hand or machine planting techniques, suited to

achieving proper depths and placement for the selected plant species.

Vegetation may be established by using seed, bare-root plants, bulbs, rhizomes, corms, tubers, or containerized stock. Younger planting stock is generally preferred to older stock because younger plants adapt more readily to new conditions.

Apply lime and fertilizer if needed based on soil test results. Refer to the appropriate job sheets for warm-season grasses, cool-season grasses, and pollinator habitat for more specific information about pH and nutrient requirements. The use of commercial fertilizer and other forms of plant nutrients must be in compliance with Delaware nutrient management regulations, as applicable.

Select the plant species to be established from Table 2 of this standard. This table contains lists of herbaceous plant species, including key attributes of each species, which can be used when selecting vegetative cover. Plantings shall consist of two or more species to provide greater vegetative diversity.

All plant materials shall be correctly handled before planting. In general, all materials shall be planted as soon as possible after receiving them from the supplier. For bare-root plants, keep the roots moist at all times and keep the plants out of direct sunlight as much as possible. Keep seed and other unrooted plant materials cool and dry until planting.

Use Figure 1 and Table 1 to determine the appropriate planting dates for the different types of plant materials.

Protect the planting from unacceptable impacts due to pests, wildlife, livestock, or fire. Exclude livestock as needed to establish the planting. Control noxious weeds as required by state law.

Additional Criteria to Reduce Soil Erosion and Sedimentation

The amount of plant biomass and cover needed to reduce wind and water erosion to the planned soil loss objective shall be determined using the current approved wind and/or water erosion prediction technology.

Additional Criteria for Improving Air Quality

In perennial crop systems such as orchards, vineyards, berries, and nursery stock, vegetation established shall provide full ground coverage in the alleyway to minimize generation of particulate matter during mowing and harvest operations.

To sequester carbon, plant cover established will result in a positive CO_2 equivalent value when determined by the current approved carbon prediction technology.

Additional Criteria for Enhancing Wildlife Habitat and Pollinator Habitat

To establish high-quality habitat for wildlife, select mixes that have a diverse combination of grasses, forbs, and legumes to provide food and cover.

If establishing cover specifically to address pollinator habitat, utilize mixes, seeding rates, and species identified in the Delaware NRCS jobsheet *Herbaceous Plantings for Pollinator Habitat*.

Additional Criteria to Improve Soil Quality

Select plants on the basis of producing high volumes of organic material to maintain or improve soil organic matter. The amount of biomass needed will be determined using the current soil condition index procedure.

Additional Criteria to Manage Plant Pests

In perennial crop systems such as orchards, vineyards, berries, and nursery stock, permanent vegetative cover shall be established and managed as a companion planting to help repel pests and/or attract beneficial insects and

other natural predators that feed on plant pests. The companion planting shall be developed according to University of Delaware Cooperative Extension Integrated Pest Management (IPM) recommendations for the target pest species.

Note: Specific cost-sharing programs or other funding sources may dictate criteria in addition to, or more restrictive than, those specified in this standard.

CONSIDERATIONS

This practice may be used to promote the conservation of wildlife species in general, including threatened and endangered species.

Consider using plant species that have multiple values such as those suited for nesting, biomass, fruit, seeds, browse, aesthetics, and tolerance to locally used herbicides.

Avoid selecting plant species or planting near existing species that may be alternate hosts to undesirable pests or that may be considered invasive or undesirable. Species diversity should be encouraged in order to minimize problems due to species-specific pests.

Consider the potential for volunteer invasive species that could pose establishment or management risks. Include mitigation for these risks in the establishment, maintenance, and management plans, when appropriate.

When establishing habitats with diverse plant species needs, such as pollinator habitat, consider establishing separate planting areas for plantings with different management requirements (e.g., establish clovers for early season pollination in a separate area from a native pollinator mix).

Mature plantings of warm-season grasses can be flammable. Large areas of warm-season grasses should have cool-season grass firebreaks adjacent to woodlands and buildings and in other locations where firebreaks may be needed to manage a prescribed burn.

Inoculating legume seed with the proper *Rhizobium* bacteria should be considered on sites where the legumes to be planted have not been previously grown.

Mowing may be needed during the establishment period to reduce competition from broadleaf annual weeds.

Consider rotating management and maintenance activities (e.g., mow only one-fourth or one-third of the area each year) throughout the managed area to maximize spatial and temporal diversity.

Consider the resource and management requirements for maintaining the planting.

Where pollinator and wildlife habitat are primary purposes, consider less dense seeding rates as long as soil loss is within tolerable soil loss limits.

Use native species that are appropriate for the identified resource concern and management objective. Consider trying to re-establish the native plant community for the site.

Consider the adverse impacts of high populations of nuisance wildlife such as deer, groundhog, beaver, or resident geese, on the establishment and maintenance of vegetation. When feasible, select plant species that are not preferred foods of the nuisance animals and utilize methods for protecting the plants until they become well established.

Consider the potential for attracting nuisance wildlife into an area, either intentionally or unintentionally. Plantings that contain preferred wildlife foods may be used to attract nuisance wildlife away from valuable agricultural crops or ornamental plantings, but may also result in attracting additional nuisance wildlife into an area.

Consider the use of grazing animals to maintain herbaceous cover.

Take note of other constraints such as economic feasibility, access, regulatory or program requirements, social effects, and visual aspects.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice and may be recorded in narrative form, on job sheets, or other approved forms. Plans and specifications shall include, but are not limited to:

1. Location and acres to be planted;
2. Recommended species and/or mixes;
3. Seeding rates and dates; and
4. Establishment procedures.

Follow the establishment recommendations provided in the Delaware job sheets for warm-season grasses, cool-season grasses, and pollinator plantings.

OPERATION AND MAINTENANCE

Operation and Management (O&M) is the responsibility of the landowner/client to implement.

An operation and maintenance (O&M) plan shall be prepared for each practice. Appropriate Job Sheet(s) may be used to serve as the management plan as well as supporting documentation and shall be provided to the client. At a minimum the following components shall be addressed in the O&M plan, as applicable:

1. Describe the extent of management needed to maintain vegetation in the desired species composition or age class (if applicable), or no management required (e.g., natural area);
2. Management may consist of mowing, prescribed burning, selective cutting, or other actions, as appropriate;
3. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. To the extent feasible, "spot" spray or mow to control weeds, so that desirable plants are not destroyed unnecessarily. Noxious weeds must be controlled as required by state law;
4. When the primary purpose is wildlife habitat, do not mow, burn, or otherwise disturb the cover during the nesting season of the desired wildlife species. For Delaware, the primary nesting season is generally from April 15 through August 15. During the establishment period, mowing may be needed during the nesting season to reduce heavy competition from annual weeds. Noxious weeds may be spot treated during the primary nesting season.
5. Describe the acceptable uses (e.g., grazing, hunting, nature preserve, etc.) and time of year/frequency of use restrictions, if any.

If native cover (other than what was planted) becomes established, and this cover meets the intended purpose of the practice and the client's objectives, the cover should be considered adequate.

Record Keeping

It is the responsibility of the landowner/client to maintain records as needed to document plan implementation. Records will include actual implementation details of all applicable components under Plans and Specifications.

SUPPORTING DATA AND DOCUMENTATION

The following is a list of the minimum data and documentation to be recorded in the case file:

1. Extent of planting in acres and field number(s) where the practice is located;
2. Assistance notes. The notes shall include dates of site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom;
3. Completed copy of the appropriate job sheet(s) or other approved form.

REFERENCES

1. Brown, Melvin L. and Russell G. Brown, 1984. *Herbaceous Plants of Maryland*. University of Maryland, Port City Press, Baltimore.

2. Brown, Russell G. and Melvin L. Brown, 1972. *Woody Plants of Maryland*. University of Maryland, Port City Press, Baltimore.

3. US Fish and Wildlife Service, Chesapeake Bay Watershed, 2003. *Native Plants for Wildlife Habitat & Conservation Landscaping*. Available on the internet at: http://www.nps.gov/plants/pubs/chesapeake/pdf/chesapeakenatives.pdf

4. USDA, Natural Resources Conservation Service. *Maryland Wildlife Biology and Management Handbook*.

FIGURE 1: USDA Plant Hardiness Zones for Delaware

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TABLE 1: Recommended Planting Dates for Delaware [1/]	
Type of Plant Material	**Plant Hardiness Zones** **7a and 7b**
Seeds - Cool-Season Grasses (includes mixes with forbs and/or legumes)	Feb 1 to Apr 30 Aug 15 to Nov 30
Seeds - Warm-Season/Cool-Season Grass Mixes (includes mixes with forbs and/or legumes)	Feb 1 to Apr 30♦ *May 1 to May 31**
Seeds - Warm-Season Grasses (includes mixes with forbs and/or legumes)	Mar 15 to May 31♦ *Jun 1 to Jun 30** *Dec 1 to Dec 31***
Bare-Root Plants; Bulbs, Rhizomes, Corms, and Tubers [2/]	Feb 1 to Apr 30 *May 1 to Jun 30**
Container Plants	Mar 1 to Apr 30 *May 1 to Jun 30** *Oct 1 to Dec 15*✦*

TABLE 1 NOTES:

1. The planting dates listed are averages for each zone. These dates may require adjustment to reflect local conditions, especially near the boundaries of the zones.

2. When planted during the growing season, most of these materials must be purchased and kept in a dormant condition until planting. Bare-root grasses are the exception—they may be supplied as growing (non-dormant) plants.

♦ In general, planting during the latter portion of this period allows more time for weed emergence and weed control prior to planting. When selecting a planting date, consider the need for weed control vs. the likelihood of having sufficient moisture for later plantings, especially on droughty sites.

* Additional planting dates during which supplemental watering may be needed to ensure plant establishment.

** Fall dormant season plantings of warm-season grasses – starting approximately 2 weeks after the first hard freeze (average date based on air temperature reading of 28 degrees F or lower, 50% probability of occurrence). Warm-season grasses need a soil temperature of at least 50 degrees F in order to germinate. If soil temperatures are colder than 50 degrees, or moisture is not adequate, the seeds will remain dormant until conditions are favorable.

✦ Frequent freezing and thawing of wet soils may result in frost-heaving of materials planted in late fall, if plants have not sufficiently rooted in place.

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TABLE 2: Herbaceous Cover

Mix	Recommended Cultivar	Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Plant Type	Remarks
1. Switchgrass *Panicum virgatum*	Shelter	1 - 2						
Eastern Gamagrass *Tripsacum dactyloides*	Pete	3 - 4	All					
Coastal Panicgrass OR *Panicum amarum*	Atlantic	2 – 3	(See Remarks)	W - SP	6 - 8	Y	Warm & Cool-season grasses	Plant with a regular grass drill. Coastal Panicgrass PHZ 7b.
Red Fescue *Festuca rubra*	Common	2 - 4						
2. Big Bluestem *Andropogon gerardii*	Niagara or Rountree	2 - 4						Use a native seed drill. For increased diversity and salt tolerance, add 2 -3 lbs./ac. Coastal Panicgrass, and reduce amounts of Big Bluestem, Switchgrass, and Indiangrass to 1 - 2 lbs./ac. each.
Switchgrass *Panicum virgatum*	Shelter	1 - 3						
Indiangrass *Sorghastrum nutans*	Rumsey	2 - 4	All	E - MW	6 - 8	Y	Warm-season grasses	
OPTIONAL:								
Coastal Panicgrass *Panicum amarum*	Atlantic	See Remarks						
3. Indiangrass *Sorghastrum nutans*	Rumsey	2 - 3						
Big Bluestem *Andropogon gerardii*	Niagara or Rountree	2 - 3	All	E - MW	6 - 8	Y	Warm-season grasses	Use a native seed drill.
Little Bluestem *Schizachyrium scoparium*	Aldous or Blaze	1 - 2						

TABLE 2: Herbaceous Cover

Mix	Recommended Cultivar	Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Plant Type	Remarks
4. Purple Lovegrass (*Eragrostis spectabilis*)	Common	0.1	All	W – SP	2 – 3	Y	Warm season grasses & native forbs	Low growing native mix. This mix is available already formulated. Contact the local NRCS office.
Little Bluestem (*Schizachyrium scoparium)*	Aldous	1.8						
Broomsedge (*Andropogon virginicus*)	Common	0.8						
Indiangrass (*Sorghastrum nutans)*	Rumsey	0.3						
Black-eye Susan (*Rudbeckia hirta*)	Common	0.45						
Partridge pea (*Chamaecrista fasciculata*)	Common	0.45						
Dogbane (*Apocynum cannabinum*)	Common	0.02						
Bristly aster (*Aster puniceus*)	Common	0.02						
Common milkweed (*Asclepias syriaca*)	Common	0.03						
Butterfly milkweed (*Asclepias tuberosa*)	Common	0.03						
5. Switchgrass *Panicum virgatum*	Shelter	2 - 3	All	E - W	6 - 8	Y	Warm-season grasses	Plant with a regular grass drill.
Coastal Panicgrass *Panicum amarum*	Atlantic	4 – 5						
6. Deertongue *Dicanthelium clandestinum*	Tioga	1 – 2	All	E – SP (See Remarks)	3 – 4	Y	Warm & cool season grasses	Low growing native mix. Use Little Bluestem on drier soils and Red Fescue on wetter soils.
Virginia Wild Rye *Elymus virginicus*	Common	2 – 3						
Red Fescue *Festuca rubra* OR	Common	3 – 4						
Little Bluestem *Schizachyrium scoparium*	Aldous	2 – 3						
7. Red Fescue *Festuca rubra*	Common	6 –10	All	E - SP	4 - 6	Y	Cool & warm season grasses	Plant with a regular grass drill.
Switchgrass *Panicum virgatum*	Shelter	2 – 4						

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TABLE 2: Herbaceous Cover

Mix		Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Sun – Shade Tolerance	Flower Color
8. Wildflowers and Legumes Select at least 3 wildflowers and 1 legume from below. Legumes should not comprise more than 25% of the total mix. Add this mix to all-grass Mixes 1 - 3, 5 - 7, 11, and 15 for added wildlife and aesthetic value.		0.25 - 0.50						
Wildflowers:	Black-eyed Susan *Rudbeckia hirta*		All	W - MW	1-2	Y	○	Yellow
	Blazing Star *Liatris spicata*		All	W - SP	2-5	Y	○ - ◗	Pink-Lavender
	Boneset *Eupatorium perfoliatum*		All	SP - P	2-4	Y	○ - ◗	White
	Butterflyweed *Asclepias tuberosa*		All	W - MW	1-2	Y	○	Bright Orange
	Heath Aster *Aster pilosus*		All	E - MW	2-5	Y	○	Light Purple
	Joe-Pye Weed *Eupatorium fistulosum*		All	SP - P	4-6	Y	○ - ◗	Pink-Purple
	New York Aster *Aster novi-belgii*		All	MW - P	3-5	Y	○	Violet
	New York Ironweed *Vernonia noveboracensis*		All	MW - P	5-8	Y	○	Purple
	Rough Goldenrod *Solidago rugosa*		All	SP - P	2-6	Y	○	Yellow
	Tickseed *Coreopsis tinctoria*		All	W - MW	2-3	Y	○	Yellow
	Wild Bergamot *Monarda fistulosa*		All	W - SP	2-4	Y	○ - ◗	Lavender
	Wild Blue Indigo *Baptisia australis*		All	W - MW	3-5	Y	○	Blue
	Wild Columbine *Aquilegia canadensis*		All	W - MW	1-2	Y	○ - ◗	Scarlet
Legumes:	Bush Clover *Lespedeza capitata*		All	E - MW	2-4	Y	○	White to Yellow
	Hairy Bush-Clover *Lespedeza hirta*		All	E - MW	2-4	Y	○	White to Yellow
	Partridge Pea *Chamaecrista fasciculata*		All	W - SP	2-3	Y	○ - ◗	Yellow

TABLE 2: Herbaceous Cover

Mix	Recommended Cultivar	Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Plant Type	Remarks
9. Orchardgrass *Dactylis glomerata*	Any	3 - 6	All	W - MW	2 - 3	N	Cool-season grasses with legumes	Can be used for: FIREBREAK
Red Fescue *Festuca rubra*	Common	3 - 4						
Alsike Clover *Trifolium hybridum*	Common	1 - 2						
White Clover *Trifolium repens*	Common	1 - 2						
10. Orchardgrass *Dactylis glomerata*	Any	4 - 6	All (See remarks)	W - MW	2 - 3	N	Cool-season grasses and legumes	Timothy does not perform well in zones 7a and 7b. Can be used for: FIREBREAK
Bluegrass *Poa pratensis* AND/OR	Not a turf type	2 - 4						
Timothy *Phleum pratense*	Climax	4 - 6						
AND ONE OF THE FOLLOWING:								
White Clover *Trifolium repens*	Common	1 - 2						
Red Clover *Trifolium pratense*	Any	1 - 2						
Common Lespedeza *Lespedeza striata*	Kobe	3 - 5						
Korean Lespedeza *Lespedeza stipulacea*	Climax or Rowan	3 - 5						
11. Chewings Fescue *Festuca rubra ssp. falax*	Common	3 - 6	All	W - MW	0.5 - 1	N	Cool-season grasses	Can be used for: FIREBREAK PATHS COMPANION PLANTING
Hard Fescue *Festuca trachyphylla*	Attila or Aurora	3 - 6						
Sheep Fescue *Festuca ovina*	Bighorn	3 - 6						

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TABLE 2: Herbaceous Cover

Mix	Recommended Cultivar	Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Plant Type	Remarks
12. Sheep fescue *Festuca ovina*	Common or Bighorn	4 - 8	All	W - MW	2 - 3	N	Cool-season grasses, forbs, and legume	Attractive, low-growing grass and wildflower mix.
Hard Fescue *Festuca trachyphylla*	Attila or Aurora	4 - 8						
Black-eyed Susan *Rudbeckia hirta*	Common	1/8 - 1/4						
Lance-leaved Coreopsis *Coreopsis lanceolata*	Common	1/8 - 1/4						
Partridge Pea *Chamaecrista fasciculata*	Common	1 - 2						
Purple Coneflower *Echinacea purpurea*	Common	1/8 - 1/4						
13. Rough Bluegrass *Poa trivialis*	Common	4 - 8	All	SP - P	4 - 5	N	Cool-season grasses and legumes	Can be used for: FIREBREAK
Chewings Fescue *Festuca rubra ssp. falax*	Common	3 - 6						
Alsike Clover *Trifolium hybridum*	Common	1 – 2						
White Clover *Trifolium repens*	Common	1 - 2						
14. Fowl Meadowgrass *Poa palustris*	Common	2 - 4	All	SP - P	4 - 5	N	Cool-season grasses and legumes	Can be used for: FIREBREAK
Virginia Wild Rye *Elymus virginicus*	Common	1 - 2						
Red Fescue *Festuca rubra*	Common	2 - 4						
Alsike Clover *Trifolium hybridum*	Common	1 - 2						
White Clover *Trifolium repens*	Common	1 - 2						

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TABLE 2: Herbaceous Cover

Mix	Recommended Cultivar	Seeding Rate (lbs/ac)	Plant Hardiness Zone	Soil Drainage Class	Max. Height (feet)	All Native Species	Plant Type	Remarks
15. Sideoats Grama *Bouteloua curtipendula*	(See Remarks)	2 - 3	All	EW - W	2 - 3	Y*	Warm season grasses	No eastern cultivars of sideoats grama have been released. Midwest varieties such as El Reno, Butte, Pierre, and Trailway reportedly have been used in parts of the Northeast. Broomsedge seed is quite expensive ($40-$50 per pound PLS).
Little Bluestem *Schizachyrium scoparium*	Aldous	3 - 4						
Broomsedge *Andropogon virginicus*	Common	1 - 2						
OR								
Deertongue *Dicanthelium clandestinum*	Tioga	1 - 2						

TABLE 2 - NOTES:

1. This table provides seed mixes of native and introduced species to meet the conservation cover purposes of erosion control, water quality, and wildlife habitat enhancement.

2. When a seeding rate is expressed as a range (i.e., 4 - 6), the lower rate should be used if erosion is not a concern.

3. Where erosion is a concern, use the higher seeding rate and add one of the following nurse crops with the selected mix:
   20 - 40 lbs/ac oats, barley, or cereal rye. This can be planted with the selected mix at the time of seeding. If using a conservation tillage method, plant the nurse crop in the fall, mow in early spring, and drill into the remaining stubble.

4. Seeding rates for warm season-grasses are in pounds of pure live seed.

5. The term "native" refers to species that occur naturally in the state of Delaware. Native mixes may include non-native nurse crops (which are short-lived) for site stabilization during establishment of the permanent planting. Due to page limitations, this listing of native species is not all-inclusive. There are more native plants which occur in Delaware and may be suitable for use in conservation plantings.

6. All legume seed should be inoculated before planting with the appropriate *Rhizobium* bacteria.

7. **Plant Hardiness Zones** designate where a species can be successfully planted in Delaware.

8. **Soil Drainage Class** (refer to the county soil survey for further information):
   E - Excessively Drained; W - Well Drained; MW - Moderately Well Drained; SP - Somewhat Poorly Drained; P - Poorly Drained.

9. **Sun - Shade:** Sunlight and shade tolerance for each species (Mix 8).
   - ○ Full Sun - 6 or more hours of light per day or 4 hours of midday sun;
   - ◗ Part Shade - 3 to 6 hours of light per day;
   - ● Shade - less than 3 hours of light per day.

10. **Additional Remarks:**

    FIREBREAK - Mix can be used as a firebreak around warm-season grass plantings when controlled burning will be used for management.

    PATHS - Mix provides a low growing, low maintenance planting suitable for pathways and walkways which will receive light to moderate use.

    COMPANION PLANTING - Mix provides a non-competitive planting that can be used for erosion control in conjunction with tree and shrub plantings.

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